

Chapter 4

Alternatives

Introduction

CEQA Guidelines Regarding Alternatives

Section 15126.6 of the CEQA Guidelines specifies the following requirements for an EIR.

- (a) An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project.
- (b) Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
- (c) The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts
- (d) The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be

caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

(e)(1) The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.

(e)(2) The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

(f) The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project.

(f)(1) Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent).

(f)(2)(C) Where a previous document has sufficiently analyzed a range of reasonable alternative locations and environmental impacts for projects with the same basic purpose, the lead agency should review the previous document. The EIR may rely on the previous document to help it assess the feasibility of potential project alternatives to the extent the circumstances remain substantially the same as they relate to the alternative.

Prior Alternative Analysis Related to Land Use and Restoration at the Hamilton Army Airfield Site

Three prior EIRs/EISs have analyzed a broad range of alternatives relative to land use and restoration at the HAAF site. These are discussed below along with their relevance to the alternatives analysis in this subsequent EIR.

Environmental Impact Statement, Hamilton Army Airfield Disposal and Reuse (U.S. Department of the Army 1996). BRAC directed the Department of Defense to close and dispose of HAAF. Accordingly, the Army evaluated the

environmental impacts of disposal and reuse of HAAF in an EIS completed in 1996. It provided an analysis of specific BRAC actions and their environmental effects as required by NEPA. Three alternatives were evaluated in the Army's Disposal and Reuse EIS: no action, disposal without encumbrances, and disposal with encumbrances. The Army identified disposal with encumbrances as its preferred alternative.

The Army prepared a ROD on disposal and reuse in 1997. The ROD indicates that, as part of the disposal process at HAAF, the Army presently requires new owners to maintain the encumbrances, including maintenance of the Landfill 26 wetland mitigation site, continuation of access easements provided to the Novato Sanitary District and the SLC, and provision of a perpetual easement for a flood control levee granted to the New Hamilton Partnership.

Although reuse was not part of the Army's action of disposal, the EIS also disclosed impacts that could occur as a result of the reuse of HAAF. Reuse scenarios evaluated in the EIS included mixed-use development, institutional development, open space with constructed wetland restoration, and open water with natural wetland formation. The reuse scenarios that the Army considered in the EIS were based on the local reuse planning efforts through the Hamilton Reuse Commission appointed by the Novato City Council. The Commission's preferred uses of HAAF were wetlands, wetlands with other uses, and low-density mixed-use development. The ROD for the Disposal and Reuse EIS did not indicate a preferred reuse scenario and indicated that evaluation and approval of an official reuse plan would be the responsibility of local planning authorities.

Relevance to current subsequent EIR - The Disposal and Reuse EIS adequately analyzed alternatives related to the disposal of HAAF and selected the preferred alternative for disposal. This prior EIS, including its discussion of alternatives, is incorporated by reference. Thus, alternatives for disposal are not considered further in this subsequent EIR.

Hamilton Army Airfield Reuse Plan (City of Novato 1996). After the Army completed the EIS on the disposal and reuse of HAAF, the City of Novato adopted a reuse plan for the former Hamilton Air Force Base. The reuse plan included HAAF and indicated a preferred reuse of the area as open space and wetlands. The reuse plan established goals and policies for planning areas throughout the former Hamilton Air Force Base, including the HAAF parcel. The plan identified development of wetlands as the goal for reuse of the HAAF parcel.

Relevance to current subsequent EIR - The reuse plan eliminated from consideration other uses of the HAAF parcel, such as residential or commercial development and aviation. As such, alternative land uses other than open space and wetlands are not considered further in this subsequent EIR.

Hamilton Wetland Restoration Project Final EIR/EIS (U.S. Army Corps of Engineers and State Coastal Conservancy 1998). Because alternative land uses were addressed by the reuse plan, the environmental impact analysis contained in the HWRP EIR/EIS focused on alternatives for restoration of

wetlands in the HAAF and SLC parcels. The project objectives could be attained by restoring wetlands either through the process of natural sedimentation or by actively placing dredged material on the site.

Four wetland restoration alternatives were evaluated in the prior EIR/EIS. These alternatives include restoration of wetlands in the following areas by the following means:

- No-Action Alternative (HWRP Alternative 1);
- HAAF parcel by natural sedimentation (HWRP Alternative 2);
- HAAF parcel using dredged material (HWRP Alternative 3);
- HAAF and SLC parcels by natural sedimentation (HWRP Alternative 4); and
- HAAF and SLC parcels using dredged material (HWRP Alternative 5).

The project alternatives were evaluated at an equal level of detail. Conservancy staff and the U.S. Army Corps of Engineers selected HWRP Alternative 5 as their preferred alternative because it best meets the project goal and objectives and provides greater diversity of habitat.

Relevance to current subsequent EIR – The HWRP EIR/EIS adequately analyzed alternatives for wetland restoration at HAAF (and SLC parcel). This document is a subsequent document to the original EIR/EIS focused on the ROD/RAP only. Thus, wetland restoration alternatives are not considered further in this subsequent EIR.

Project Objectives and Goals

The goal of the HAAF Main Airfield Parcel ROD/RAP is to remove and/or cover contamination in the inboard area, rendering it suitable for open-space wetland restoration. For the coastal salt marsh, the objective is to remove contaminated soils to the maximum extent practical to protect public health and to maintain its wetland function. The ROD/RAP has been developed and would be implemented in support of the HWRP. Therefore, the goal of the HWRP to “create a diverse array of wetland and wildlife habitats at HAAF that benefits a number of endangered species as well as other migratory and resident species” is implicit in the goal of the ROD/RAP.

One of the key objectives of the HWRP is “to recognize existing site opportunities and constraints, including the runway and remediation of contaminated areas, as integral components of design.” Pursuant to this objective, the ROD/RAP proposes specific remedial action strategies at each site of known contamination in the main airfield and the coastal salt marsh that are fundamentally related to the establishment and long-term development of the wetland. The ROD/RAP defines target cleanup levels for contaminants that are protective of potential wetland receptors. Remedial actions are designed to ensure that target levels for all contaminants are achieved based on contaminant type, risk to human or ecological health, and the potential exposure pathways.

Target levels will be maintained following remediation and during construction, establishment, and long-term development of the wetland.

The ROD/RAP has been developed with the ultimate view toward wetland restoration on the site pursuant to the HWRP and directly or indirectly supports other objectives of the HWRP, which are described in Chapter 2.

Nature of Proposed Project

Introduction

The proposed HAAF Main Airfield Parcel ROD/RAP documents the selected environmental response actions to be taken to address potential risks associated with residual contaminants on the main airfield parcel and the adjacent coastal salt marsh, and restoration of a wetland at HAAF. The ROD/RAP summarizes the following:

1. Lists those sites that have been investigated during the remedial investigation and those that require further investigation.
2. Establishes target cleanup levels (action goals) for all contaminants on the property based on an assessment of the human and ecological risk for each contaminant during construction and maturation of the wetland.
3. Identifies the goals (Remedial Action Objectives [RAOs]) that each remedial action is intended to achieve in terms of protecting human health and the environment by removing or reducing residual contaminants to their respective action goals or eliminating exposure to contaminants.
4. Describes the selected response actions (remedial strategies) for each site in order to achieve the RAOs.

Chapter 2 identifies the remedial strategies for each site included in the proposed project.

Alternatives Considered during Development of ROD/RAP

Unlike many other projects subject to CEQA, alternative options for residual contamination at sites at the HAAF and coastal salt marsh have been considered extensively before commencement of the formal CEQA process. This consideration of alternatives is summarized below.

Army BRAC Sites

The ROD/RAP summarizes the prior investigations, identifies the need for remedial action, and fully develops and evaluates alternatives for each Army BRAC site that requires remedial action. The ROD/RAP evaluates

- ROD/RAP Alternative 1, No Further Action;
- ROD/RAP Alternative 2, Excavation and Offsite Disposal; and
- ROD/RAP Alternative 3, Manage In Situ, with Monitoring and Maintenance for Army BRAC Sites.

ROD/RAP Alternative 4 was developed specifically for issues that will be addressed by the HWRP and is not evaluated for the Army BRAC sites. The Army BRAC program will perform the environmental response actions for the Army BRAC sites that require remedial action. The consideration of alternatives in the ROD/RAP and the summary of consideration of alternatives in prior documents (such as the feasibility studies) are incorporated by reference.

As discussed below, the remedial process has already considered a range of alternatives for residual contamination at Army BRAC sites, and no additional feasible alternatives beyond those addressed in the ROD/RAP have been identified for the subsequent EIR. However, unlike the ROD/RAP, this subsequent EIR considers application of a single alternative for all sites for the purposes of disclosure and discussion, a conceptual on-site treatment alternative for organic contaminants, and an engineered cap alternative. As discussed below, all of these alternatives are either considered infeasible, unnecessary to achieve the project goals, or ineffective for purposes of substantially avoiding or lessening significant impacts of the proposed project.

Other Army BRAC Environmental Concerns

In addition to issues surrounding the Army BRAC sites identified above, three other environmental concerns are addressed in the ROD/RAP by the Army BRAC program. These issues include

- a group of four sites identified by the ASR,
- the GSA/BRAC soil stockpiles located on the runway, and
- radiological cylinders.

The ASR sites addressed in this ROD/RAP include: Testing Range (ASR Site #4); Alleged Hazardous, Toxic, and Radiological Waste Disposal Site (ASR Site #8); Skeet Range (ASR Site #18); and Firing-In-Butt (ASR Site #19). One of the four ROD/RAP remedial strategies will be applied at these sites once sufficient information is available. Thus, this alternatives analysis includes these sites like any other ROD/RAP site.

The RWQCB will determine what additional actions (if any) may be required with respect to the GSA/BRAC stockpiled soil currently on the runway. As it is presently unknown whether any additional actions may be required, no alternatives are considered for this issue in the ROD/RAP.

No environmental concerns were identified for the radiological cylinders (see the ROD/RAP). Therefore no remedial action is proposed for this issue and no remedial alternatives are considered further in the ROD/RAP or in this subsequent EIR.

Hamilton Wetland Restoration Project Issues

The Army Civil Works Program, through the HWRP, will take actions described in this ROD/RAP to address the potential risks posed by the following environmental issues:

- Inboard Area-Wide DDTs,
- PAHs in soil adjacent to the runway, and
- LBP.

For the Inboard Area-Wide DDTs and PAHs in soil adjacent to the runway, the ROD/RAP evaluates two alternatives: Alternative 1, No Further Action; and Alternative 4, Manage Onsite, with Monitoring and Maintenance for the Army Civil Works Program. Alternative 4 was specifically developed for issues that will be addressed by the Army Civil Works Program through the HWRP. Alternatives 2 and 3 were not considered in the ROD/RAP because they apply only to sites being addressed by the Army BRAC program. In addition to the ROD/RAP-identified alternatives, an excavation alternative is considered in this subsequent EIR for these concerns, as discussed in this analysis of alternatives.

To address possible soil contamination from LBP at current and previously demolished building locations, the ROD/RAP selected the following alternative:

The HWRP will provide 3 feet of stable cover over the footprint of the building and to a distance of 6 feet beyond the building footprint. If 3 feet of cover cannot be achieved, the soil area at these current and previously demolished building locations, plus 6 feet beyond the building perimeter, will be scraped to a depth of 6 inches and managed elsewhere on site beneath 3 feet of stable cover. The building foundation and any concrete/asphalt/hard foundation surface adjacent to the building may remain.

No other alternatives were considered or evaluated in the ROD/RAP. In addition to the ROD/RAP-selected alternative, this subsequent EIR considers an excavation alternative for LBP in this analysis of alternatives.

Alternatives Suggested During the Scoping Process for this EIR

The NOP for the Hamilton ROD/RAP was issued on April 11, 2003. Written comments were received by the Conservancy subsequent to issuance of the NOP. A scoping meeting was held on May 1, 2003, but the single individual who attended the scoping meeting suggested no alternatives. No alternatives were suggested in written comment on the NOP.

Significant Environmental Impacts of the Proposed Project

As noted above, CEQA Guideline 15126.6 (f) states “alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project.” As such, alternatives that do not avoid or substantially lessen significant effects of the project do not need to be analyzed in an EIR.

Chapter 3 presents the assessment of environmental impacts of the proposed project. The analysis in this subsequent EIR identifies environmental impacts to the following resource areas.

- Geology, Seismicity, and Soils – No significant impacts would occur.
- Water Resources – No significant impacts would occur.
- Public Health – No significant impacts would occur.
- Biological Resources – Direct and indirect impacts may occur to sensitive species from remedial activities in the coastal salt marsh, adjacent to brackish marsh, and in inboard areas. Temporary and permanent loss of coastal salt marsh habitat may be sustained as a result of excavation and disposal of residual contamination in the coastal salt marsh area.
- Land Use and Public Utilities – No significant impacts would occur.
- Hazardous Substances and Waste – No significant impacts would occur.
- Transportation – A significant and unavoidable impact would occur from the addition of traffic to State highways that currently operate at level of service F during peak periods.
- Air Quality – Potential short-term air quality impacts (PM₁₀) may occur as a result of remedial activities.
- Noise – Potential short-term noise impacts may occur to sensitive receptors in the area as a result of equipment used to conduct site cleanup activities.
- Cultural Resources – Potential impacts to cultural resources may occur as a result of ground-disturbing activities.

Methods for Screening Alternatives

A range of alternatives was considered after analysis of the prior remedial documents, the ROD/RAP, input provided in scoping comments, the results of the impact analysis in Chapter 3, and the cumulative impact analysis in Chapter 5.

While the number of conceivable alternatives that might be considered for a project of this nature is vast (due to the number of sites), the range of alternatives considered was determined to represent a reasonable range for the purposes of analysis, considering the nature of the proposed project and the significant impacts identified.

Alternatives were then screened for their feasibility, their ability to meet project objectives, and their potential to avoid or substantially reduce significant impacts of the project. Alternatives that were determined to be infeasible, to fail to meet at least some of the project objectives, to be remote or speculative, or to ineffectively avoid or substantially lessen the significant impacts of the proposed project were dismissed from further consideration. Alternatives determined to be feasible or potentially feasible, to meet project objectives, and to have some potential to avoid or substantially lessen the significant impacts of the proposed project were then analyzed for their environmental impacts.

Alternatives Analysis

Alternatives considered in this subsequent EIR are discussed below, including both those dismissed from further consideration and those analyzed.

Summary of Alternatives Considered

There are no locational alternatives for the proposed project because the project consists of remedial options for sites located at HAAF and the coastal salt marsh. All alternatives relate to different means of addressing residual contamination in support of the HWRP.

The alternatives initially considered for analysis in this subsequent EIR included

- SEIR Alternative 1. No Project,
- SEIR Alternative 2. Excavation and Off-Site Disposal at All Sites,
- SEIR Alternative 3. In-Situ Management of All Sites,
- SEIR Alternative 4. On-Site Management/Consolidation,
- SEIR Alternative 5. On-Site Excavation and Treatment of Organic Contaminants, and

- SEIR Alternative 6. Engineered Cap Alternative.

Each of these is described below.

SEIR Alternative 1. No Project

Analysis of the No-Project Alternative is required by CEQA. Functionally, this alternative has been evaluated during development of the ROD/RAP on a site-by-site basis. The No-Project Alternative consists of no further remedial action at all of the identified remedial sites at HAAF and the coastal salt marsh that are addressed in the ROD/RAP.

Under this alternative, the present effects of residual contamination at the coastal salt marsh sites in terms of ecological exposure would continue unaltered. Any inboard sites identified with residual contamination above the remedial action goals would not be excavated, managed in situ, or managed on-site.

A fundamental planning objective of the remedial process has been cleanup of the HAAF site to ensure its suitability for wetland reuse. Were this not to occur, the outcome would be that the HWRP would not be implemented. In that event, the only reasonably foreseeable action in the short term would be that the HAAF parcel would remain as it presently is, pending future determinations about land use and remediation.

The No-Project Alternative would include no construction activity. Thus, any impacts of the proposed project related to loss of existing coastal salt marsh habitat, disruption to existing biological resources, temporary sedimentation, construction dust, construction noise, and construction traffic would be avoided.

SEIR Alternative 2. Excavation and Off-Site Disposal for All Sites

Functionally, this alternative has been evaluated during development of the ROD/RAP for all Army BRAC sites on a site-by-site basis. SEIR Alternative 2 considers the application of this alternative to all identified inboard and coastal salt marsh sites with residual contamination above the remedial action goals.

For the coastal salt marsh sites, this alternative would not be different than the proposed project, because the ROD/RAP selected excavation and off-site disposal for residual contamination above the RAOs for coastal salt marsh sites. Thus, biological impacts of excavation in the coastal salt marsh would be the same as the proposed project.

For the inboard sites, inboard PAHs/DDTs, and inboard LBP, this alternative would increase significantly the amount of excavation and transport of contaminated soil compared to the proposed project. This alternative would remove all contamination above the RAOs regardless of the ultimate cover that

might be achievable by the HWRP design. Depending on the depth of contamination, complete removal may not always be achievable at all sites.

This alternative would support the objective of cleaning up the site suitable to wetland reuse the same as the proposed project and is considered technically feasible.

This alternative would increase significantly the construction impacts of excavation. Although the specific amount of excavated and transported soil has not been quantified, it would be substantially larger than the proposed project, resulting in increased construction emissions and dust, increased construction noise, and increased construction traffic. As describe in the ROD/RAP, the estimated maximum volume of soil to be excavated, moved, or managed relative to the area-wide DDT and PAH issues is 871,000 cubic yards. Presuming an average dump truck load of 20 cubic yards, approximately 44,000 dump truck trips would be required to transport this soil off site. The estimated volume of contaminated soil for the ROD/RAP is between 40,000 and 50,000 cubic yards, requiring up to 2,500 truck trips. Using the estimates noted above, this alternative could result in approximately 17 times the amount of truck traffic.

The cost of this alternative has not been quantified. However, since this approach would require excavation at the inboard sites where the ROD/RAP selected in-situ or on-site management, at all areas of PAH and DDT contamination above RAOs, and at all areas where LBP is a concern, the cost would be substantially more than the proposed project.

This alternative would not avoid or substantially lessen the significant impacts identified for the proposed project. This alternative would make the site suitable for wetland reuse. This alternative would substantially increase construction impacts related to air quality, noise, and traffic, and would cost substantially more than the proposed project.

Alternative 3. In-Situ Management of All Sites

Functionally, this alternative has been evaluated during development of the ROD/RAP on a site-by-site basis for all Army BRAC sites. SEIR Alternative 3 considers the application of this alternative to all identified inboard and coastal salt marsh sites with residual contamination above the remedial action objectives. This alternative would therefore only partially support cleanup of the site so that it is suitable for wetland reuse.

For the coastal salt marsh sites, this alternative would be the same as the No-Project Alternative. Thus, existing ecological exposure to residual contaminants at these sites would continue.

For the inboard sites, preliminary geomorphic modeling of the conceptual HWRP design has indicated that primary channels would result in substantial tidal scour of the placed dredge material. Thus, for sites where ultimate tidal scour would

remove all of the cover to the horizon of residual contamination (above action goals), this alternative would result in ecological exposure to that residual contamination. This alternative would increase the potential for ecological exposure to residual contamination compared to the proposed project, because it would not remove any residual contamination in the coastal salt marsh or in inboard sites that might be ultimately exposed with implementation of the HWRP.

Excavation effects on biological resources in the coastal salt marsh would not occur under this alternative, although residual exposure would remain. For the inboard sites, inboard PAHs/DDTs, and inboard LBP, this alternative would reduce the amount of excavation and transport of contaminated soil compared to the proposed project, resulting in decreased construction emissions and dust, decreased construction noise, and decreased construction traffic.

The cost of this alternative would be less than the proposed project and this alternative is technically and economically feasible.

This alternative would increase the potential for ecological exposure to residual contamination compared to the proposed project, would eliminate short-term biological impacts due to excavation in the coastal salt marsh, and would reduce construction impacts related to air quality, noise, and traffic, and is feasible. Because this alternative does not clean up the site pursuant to the wetland reuse, it does not meet the project objectives overall.

Alternative 4. On-Site Consolidation/Management

This alternative was previously evaluated in the FFS for the inboard sites (CH2M HILL 2001). SEIR Alternative 4 considers the application of this alternative to all identified inboard and coastal salt marsh sites with residual contamination above the remedial action goals.

Under this alternative, areas where residual contamination is greater than chemical-specific RAOs and sufficient stable cover is not practical would require removal through excavation and transport of the removed material to an on-site consolidation/disposal area. The consolidation/disposal area is presumed to require conformance to the substantive requirements of Title 23 and Title 27 regulations for waste management units. Depending on characterization of residual material on site, the consolidation site would have to meet the requirements for either a Class I (hazardous waste) or Class II (designated waste) landfill, or both if there were separable units. For the purposes of this alternatives analysis only, it is assumed that the consolidation/disposal site would require the following: at least a 2-foot clay liner or a synthetic liner; a leachate collection and removal system; closure through installation of an engineered cap; maintenance of the site for cover-integrity; and maintenance of the leachate collection and removal system. Title 23 and Title 27 requirements also mandate that new landfills must be designed so that contained wastes are a minimum of 5 feet above the highest anticipated elevation of underlying groundwater. Given these requirements, the consolidation/disposal site would need to be in a non-

tidal area and would need to be separated from areas to be restored to seasonal wetlands. Groundwater varies from 0 to 8 feet below ground surface, but is of poor quality due to the influence of San Pablo Bay. It is possible that any new landfill would need to place clean fill beneath the landfill itself to meet Title 23 and 27 requirements.

For the coastal salt marsh sites, this alternative would be the same as the proposed project. Residual contamination in the coastal salt marsh would have to be excavated and moved to the inboard area. Thus, biological impacts of excavation in the coastal salt marsh would be the same as the proposed project.

This alternative would require the excavation and movement of contaminated soils from the inboard areas that would be exposed by tidal scour with implementation of the HWRP. The amount of excavated soils from inboard BRAC sites would be the same as the proposed project; however, soils excavated from inboard BRAC sites would be managed on-site in the consolidation unit instead of disposing of them at an off-site location. For the inboard BRAC sites, this alternative would reduce the amount of transport of contaminated soil off-site compared to the proposed project. For the area-wide DDTs and area-wide PAHs, this alternative is presumed to be the same as the proposed project, given that the potential volume of the soil from these areas could make the consolidation unit so large that it would significantly hinder the wetland project.

This alternative would increase on-site manipulation during construction due to construction associated with the establishment of permitted waste management and potentially due to increased soil movement. This increased on-site manipulation would somewhat offset the decreased air and noise resultant from elimination of transportation of contaminated soils off-site. Construction traffic impacts off-site would be less than the proposed project (there would still be traffic, but not soil transport traffic).

This alternative would require an increase in on-site management relative to the on-site consolidation/disposal unit. The cost of this alternative has not been quantified. Off-site transportation and disposal costs would be eliminated but cost savings (relative to the proposed project) would likely be offset by the costs of design, permitting, and management for the presumed waste management unit on site.

This alternative would meet the objective of cleaning up the site to be suitable for wetland reuse and is technically feasible, as is the proposed project. However, this alternative would not meet the HWRP objective to "design and engineer a restoration project that stresses simplicity and has little need for active management" because of the active management associated with the waste management unit on site. The amount of restored wetlands would be less than the proposed project because the waste management unit would consume some of the available restoration space. Opposition might also be encountered to the issuance of a permit for a designated waste management unit on the BRAC property adjacent to planned trails, existing habitat areas (i.e. Pacheco Pond), and the restoration area itself. This alternative would lower off-site transport-related traffic impacts, but would not otherwise avoid or substantially lessen other

impacts of the proposed project. This alternative would require additional on-site construction, which would increase associated dust and noise impacts on site. A variant of this alternative would be to excavate and remove only the soils containing contaminants at concentrations above hazardous water levels and to manage on site all other residual contamination soils above RAOs where stable cover cannot be assured. This variant would eliminate the need to permit any portion of the site as a Class I facility.

Alternative 5. In-Situ or On-Site Treatment of Organic Contaminants

Organic contaminants identified at inboard and coastal salt marsh sites above remedial action objectives include PAHs, TPH, and DDTs. SEIR Alternative 5 considers in-situ or on-site treatment of these organic contaminants for certain inboard sites with residual organic contamination above the remedial action goals.

There are a number of potential treatment technologies for these organic contaminants. Some of these treatment options include: vapor extraction and biological treatment of petroleum hydrocarbons; soil washing, incineration, and biotreatment for PAHs; and incineration, solvent extraction, and chemical oxidation for DDTs.

For the coastal salt marsh sites, all sites include a number of heavy metals as contaminants of concern. Thus in-situ or on-site treatment is not considered feasible for these sites and the ROD/RAP remedy would need to be implemented. Thus, biological impacts of excavation in the coastal salt marsh would be no less than the proposed project.

For the inboard sites wherein residual contamination above action goals consists solely of treatable organic contaminants, this alternative would consist of either in-situ treatment or excavation and transportation to an on-site treatment location. For sites wherein contaminants not amenable to treatment (e.g., heavy metals) are present at levels above the action goals, the ROD/RAP selected option would need to be implemented.

This alternative would meet the objective of cleaning up the site so that it is suitable for wetland reuse the same as the proposed project. However, depending on the treatment option selected, the duration of remedial actions could be longer than the proposed project.

This alternative could include an amount of excavation similar to the proposed project. Where in-situ remediation of certain areas of contamination is feasible, however, overall excavation levels might be less than the proposed project. This alternative would reduce the transportation of contaminated soils off-site relative to the proposed project since some organic-contaminated soil would be treated on-site or in situ.

The cost of this alternative has not been quantified. In-situ management may require lengthier remedial action than the ROD/RAP selected remedies. Many of the treatment technologies for organic contaminants (such as incineration) are expensive and can engender separate concerns of their own (such as emissions).

This alternative would not avoid or substantially lessen the significant impacts identified for the proposed project, apart from producing a reduction in off-site soil transport traffic and traffic emissions. This alternative would likely increase overall costs of remediation, might involve additional impacts (depending on treatment technology), and might delay implementation of the HWRP.

Alternative 6. Engineered Cap of All Sites

SEIR Alternative 6 considers placement of an engineered “cap” at all identified inboard and coastal salt marsh sites with residual contamination above the remedial action objectives. For the purposes of this alternative analysis only, the “cap” is presumed to consist of an upper vegetation layer, a low permeability layer, and a foundation layer. The low permeability layer is presumed to consist of fine-grained soils such as low permeability clay. Synthetic material could also be used as an “impermeable” barrier in conjunction with or separate from natural materials. The foundation layer is presumed to consist of worked and compacted existing consolidated soils.

For the coastal salt marsh sites, this alternative would include the placement of material impervious to tidal scour and erosion over all residual contamination above the action goals. Practically, this would mean placement of material capable of containing contaminated soils and of being resistant to long-term erosion. The “cap” material would need to isolate the residual contamination both vertically (on top) and horizontally (around its circumference). This could permanently convert some of these areas from tidal marsh because the top grade of the cap material would be at a higher elevation than the current sediment, creating dissimilar islands within the coastal salt marsh. Also, the feasibility of any sediment stabilizing over all of the cap material, and thus of revegetation, is unknown. The long-term stability of any such cap in a tidal environment has not been assessed. The biological impacts of this alternative on the coastal salt marsh would likely be greater than the proposed project because more permanent losses of marsh would probably occur.

This alternative, if feasible, could lower the potential for ecological exposure to residual contamination at some of the coastal salt marsh sites compared to the proposed project. The only lowering of potential would be at any coastal salt marsh sites where excavation of residual contamination above the action goals is not ultimately feasible. Whether this alternative would substantially lessen the potential exposure at these sites is considered speculative.

For the inboard PAHs/DDTs, this alternative is not considered feasible because of the extensive areas of concern and the possibility that the extensive placement of impervious material could hinder marsh formation and could undermine the

feasibility of the overall HWRP design. Thus, for these concerns, this alternative presumes management on site, as does the proposed project.

If impervious material were placed to cap residual contamination at sites located in areas of primary tidal channels or other substantial tidal scour, channel formation (in terms of depth) would be hindered vertically. This outcome could result in muted tidal exchange and/or diversion of tidal channel formation into other parts of the HAAF parcel. Both of these effects could negatively affect the success of the HWRP in creating viable tidal marsh. Thus, this alternative presumes excavation of residual contamination above RAOs in the inboard BRAC sites expected to be exposed by scour and transport off site, which is the same as the proposed project.

For other inboard sites and inboard LBP that are not in the path of expected tidal scour, this alternative is technically feasible. This alternative overall would meet the objective of cleaning up the site to make it suitable for wetland reuse to the same extent as the proposed project.

This alternative would increase significantly the construction impacts related to placement of cover material. Some off-site transportation of soil would be decreased for coastal salt marsh sites, relative to the proposed project. However, the amount of imported material, while not quantified, could be considerable and thus no substantial lowering of construction-related air quality, noise, or traffic impacts is identified. The cost of this alternative has not been quantified. However, the design and implementation of the caps at coastal salt marsh and some of the inboard sites is likely to result in the overall costs being greater than the proposed project.

This alternative would not avoid or substantially lessen the significant impacts identified for the proposed project. This alternative may lower the potential for ecological exposure at certain sites in the coastal salt marsh if it is not feasible to entirely excavate residual contamination above RAOs, although this is somewhat speculative. Cost for this alternative is likely to be greater than for the proposed project.